

**REMARKS**

Claims 1-49 are pending in this application. Claims 29, 34-41, and 44 have been canceled without prejudice as being drawn to a non-elected invention. Claims 45 has also been canceled because it is directed to subject matter essentially the same as amended claim 43. Claims 7, 15-23, 30-33, 42, 43, and 46-49 have been amended and new claims 50 and 51 have been added. Accordingly, upon entry of the amendments presented herein, claims 1-28, 30-33, 42, 43, and 46-51 will remain pending in the application.

Support for the amendments to the claims may be found throughout the specification and claims as originally filed

*No new matter has been added.* Any amendments to and/or cancellation of the claims was done solely to more particularly point out and distinctly claim the subject matter of Applicants' invention in order to expedite the prosecution of the application. Applicants reserve the right to pursue the claims as originally filed in this or a separate application(s).

**Election/Restriction**

The Examiner has required restriction of the invention under 35 U.S.C. § 121 to one of the following groups:

Group I: Claims 1-15, drawn to a process for enhanced production of pantothenate comprising culturing a microorganism having a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, classified in class 435, subclass 106.

Group II: Claims 16-22, drawn to a process for enhanced production of pantothenate comprising culturing a microorganism having a deregulated pantothenate biosynthetic pathway, a deregulated isoleucine-valine (*ilv*) biosynthetic pathway, and a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, classified in class 435, subclass 106.

Group III: Claim 29, drawn to a process for producing pantothenate comprising culturing a microorganism having a deregulated pantothenate biosynthetic pathway under excess serine, classified in class 435, subclass 106

Group IV: Claims 34, 35, drawn to a composition comprising pantothenate, classified in class 562, subclass 571.

Group V: Claims 36-41, drawn to a recombinant microorganism for the enhanced production of pantothenate, said microorganism having a deregulated pantothenate biosynthetic pathways and a deregulated methylenetetrahydrofolate biosynthetic pathway, classified in class 435, subclass 252.3.

Group VI: Claims 42, 43, drawn to a process for producing pantothenate comprising culturing a recombinant microorganism having a deregulated *panB* gene, a deregulated *panD* gene, and at least one deregulated isoleucine-valine (*ilv*) biosynthetic enzyme-encoding gene, classified in class 435, subclass 106.

Group VII: Claim 44, drawn to a process for producing pantothenate comprising culturing a microorganism having a deregulated *panB* gene, a deregulated *panD* gene under conditions of excess serine, classified in class 435, subclass 106.

Group VIII: Claim 45, drawn to a process for producing pantothenate comprising culturing a recombinant microorganism having a deregulated *panB* gene, a deregulated *panD* gene, and a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway under conditions of excess valine, classified in class 435, subclass 106.

Group IX: Claim 46, drawn to a process for producing pantothenate comprising culturing a recombinant microorganism having a deregulated *panB* gene, a deregulated *panD* gene, and a deregulated *glyA* gene under conditions of excess valine, classified in class 435, subclass 106.

Group X: Claims 47, drawn to a process for producing pantothenate comprising culturing a recombinant microorganism having a deregulated *panB* gene, a deregulated *panD* gene, and a mutated, deleted, or disrupted *purR* gene under conditions of excess valine, classified in class 435, subclass 106.

Group XI: Claims 48, drawn to a process of producing pantothenate comprising culturing a recombinant microorganism having a deregulated *panB* gene, a deregulated *panD*

gene, and a deregulated *serA* gene under conditions of excess valine, classified in class 435, subclass 106.

Group XII: Claim 49, drawn to a process for producing pantothenate comprising culturing a recombinant microorganism having a deregulated *panB* gene, a deregulated *panD* gene, a deregulated *serA* gene, and a deregulated *glyA* gene under conditions of excess valine, classified in class 435, subclass 106.

The Examiner is of the opinion that the

[i]nventions of Groups I-III and VI-XII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). The processes of Groups I-III and VI-XII are patentably distinct and independent because each process requires different process steps, reagents, and parameters.

Applicants respectfully traverse the foregoing Restriction Requirement and submit that the requirement is improper. However, in order to be considered responsive to the instant Office Action, Applicants hereby elect Group I (claims 1-15), *with traverse*. Applicants traverse the Restriction Requirement to the extent that Groups I, II, VI, IX, X, XI, and XII should be reformed as a single group containing claims 1-22, 42, 43, 46, 47, 48, 49, and new claims 50 and 51 (referred to hereinafter as "*newly formed Group I*"). Applicants' grounds for traversal are set forth below.

Contrary to the Examiner's position, the processes of the claims of Groups I, II, III, VI, IX, X, XI, and XII are capable of use together and have the same mode of operation, function and effect, *e.g.*, structural components. Specifically, the starting materials of each group are the same, *e.g.*, a microorganism having a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway.

In addition, as Groups I, II, III, VI, IX, X, XI, and XII are of the same class and subclass, a literature search of Groups I, II, III, VI, IX, X, XI, and XII would be nearly, if not completely, co-extensive. Accordingly, Applicants respectfully submit that a sufficient search and

examination with respect to the claimed methods can be made without serious burden on the Examiner. As the M.P.E.P. states:

[i]f the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions. M.P.E.P. § 803.

Applicants thus respectfully submit that the search with regard to culturing a microorganism have a deregulated *methylenetetrahydrofolate (MTF) biosynthetic pathway* to enhance pantothenate production (Group I, claims 1-15) would be coextensive with a search for culturing a microorganism have a deregulated *MTF biosynthetic pathway*, a deregulated pantothenate biosynthetic pathway, and a deregulated isoleucine-valine (*ilv*) biosynthetic pathway (Group II, claims 16-22), coextensive with a search for culturing a recombinant microorganism having a deregulated *MTF biosynthetic pathway* and specifically having a deregulated *panB* gene and a deregulated *panD* gene, (Group VI, claims 42 and 43), coextensive with a search for culturing a recombinant microorganism having a deregulated *MTF biosynthetic pathway* and specifically having a deregulated *panB* gene, a deregulated *panD* gene, and a deregulated *glyA* gene under conditions of excess valine (Group IX, claim 46), coextensive with a search for culturing a recombinant microorganism having a deregulated *MTF biosynthetic pathway* and specifically having a deregulated *panB* gene, a deregulated *panD* gene, and a mutated, deleted, or disrupted *purR* gene under conditions of excess valine (Group X, claim 47), coextensive with a search for culturing a recombinant microorganism having a deregulated *MTF biosynthetic pathway* and specifically having a deregulated *panB* gene, a deregulated *panD* gene, and a deregulated *serA* gene under conditions of excess valine ( Group XI, claim 48), and coextensive with a search for culturing a recombinant microorganism having a deregulated *MTF biosynthetic pathway* and specifically having a deregulated *panB* gene, a deregulated *panD* gene, a deregulated *serA* gene, and a deregulated *glyA* gene under conditions of excess valine (Group XII, claim 49).

In view of the above traversal, Applicants hereby elect *newly formed Group I*, claims 1-22, 42, 43, 46, 47, 48, 49, and new claims 50 and 51.

The Examiner has indicated that claims 23-28 link the claims of Groups I and II and that claims 30-33 link the claims of Groups I-III. Applicants are somewhat unclear as to the Examiner's designation of dependent claims 23-28 and/or 30-33 as linking the broader claims from which they depend. Perhaps the Examiner intended, rather, that dependent claims 23-28 be included in both Groups I and II and intended that dependent claims 30-33 be included in each of Groups I, II, and III.

The Examiner is respectfully requested to clarify the status of claims 23-28 and 30-33 for the record. In any event, Applicants have kept these claims pending and suggest that they be properly examined with Group I as elected and possibly with newly formed Group I, as discussed above.

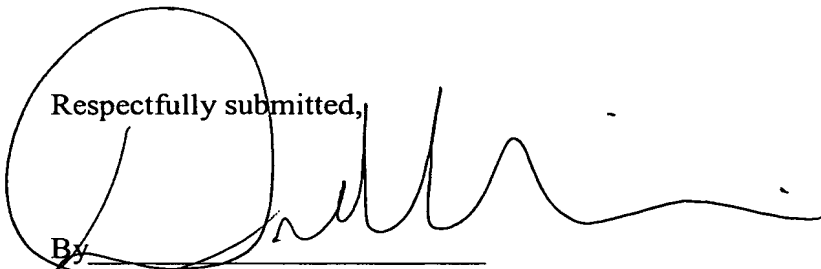
Applicants reserve the right to traverse the above restriction with respect to the non-elected Groups in this or subsequent applications.

**SUMMARY**

If a telephone conversation with Applicants' Attorney would expedite the prosecution of the above-identified application, the examiner is urged to call the undersigned at (617) 227-7400.

Dated: September 11, 2006

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Debra J. Milasincic', is written over a horizontal line. The signature is fluid and cursive.

By \_\_\_\_\_  
Debra J. Milasincic  
Registration No.: 46,931  
LAHIVE & COCKFIELD, LLP  
28 State Street  
Boston, Massachusetts 02109  
(617) 227-7400  
(617) 742-4214 (Fax)  
Attorney/Agent For Applicant